Copper Wiring With High Temperature Superconductor (HTS) Layer

ABSTRACT OF THE DISCLOSURE

Semiconductor devices and methods of forming the semiconductor devices using an HTS (High Temperature Superconductor) layer in combination with a typical diffusion layer between the dielectric material and the copper (or other metal) conductive wiring. The HTS layer includes a superconductor material comprised of barium copper oxide and a rare earth element. The rare earth element yttrium is particularly suitable. For semiconductor devices having other semiconductor circuits or elements above the wiring, a capping layer of HTS material is deposited over the wiring before a cover layer of dielectric is deposited.